What is claimed is:

1. A bioresorbable, self-expanding stent comprising:

a cylindrical sleeve having a first end and a second end;

a latticed network disposed between said first end and said second end of said cylindrical sleeve;

said latticed network formed from a plurality of monofilaments, wherein at least two of said monofilaments are braided in an alternating braid pattern; and

said plurality of monofilaments comprises at least one biocompatible polymer, and said cylindrical sleeve having a controllable in vivo lifetime.

2. The bioresorbable, self-expanding stent of claim 1 wherein said plurality of monofilaments ranges from 30 to 48 monofilaments.

3. The bioresorbable, self-expanding stent of claim 2 wherein said plurality of braided monofilaments comprise 40 monofilaments.

4. The bioresorbable, self-expanding stent of claim 1 further including at least a single strand shift between each adjacent monofilament.

5. The bioresorbable, self-expanding stent of claim 1 further including an as-braided braid-crossing angle ranging from approximately 100° to 150°.

6. The bioresorbable, self-expanding stent of claim 1 further including an as-braided braid-crossing angle of approximately 110°.

7. The bioresorbable, self-expanding stent of claim 1 further including a post-annealed braid-crossing angle ranging from approximately 125° to 150°.

8. The bioresorbable, self-expanding stent of claim 1, wherein said braid pattern is selected from the group consisting of under-one-over-one, under-one-over-two, under-one-over-three, under-two-over-two, under-two-over-three, and under-three-over-three.

9. A bioresorbable, self-expanding stent comprising:

a cylindrical sleeve having a first end and a second end;

a latticed network disposed between said first end and said second end of said cylindrical sleeve;

said latticed network formed from a plurality of monofilaments helically wound about a longitudinal axis of said cylindrical sleeve, wherein approximately one-half of said plurality of monofilaments are wound in a clockwise direction and approximately one-half of said plurality of monofilaments are wound in a counter-clockwise direction, and said plurality of monofilaments are braided in an alternating braid pattern; and

said plurality of braided monofilaments comprises at least one biocompatible polymer, and said cylindrical sleeve having a controllable in vivo lifetime.

10. The bioresorbable, self-expanding stent of claim 9 wherein said plurality of monofilaments ranges from 30 to 48 monofilaments.

11. The bioresorbable, self-expanding stent of claim 10 wherein said plurality of braided monofilaments comprise 40 monofilaments.

12. The bioresorbable, self-expanding stent of claim 9 further including a single strand shift between each adjacent monofilament.

13. The bioresorbable, self-expanding stent of claim 9 further including an as-braided braid-crossing angles ranging from approximately 100° to 150°.

14. The bioresorbable, self-expanding stent of claim 9 further including an as-braided braid-crossing angle of approximately 110°.

15. The bioresorbable, self-expanding stent of claim 9 further including an post-annealed braid-crossing angle ranging from approximately 125° to 150°.

16. The bioresorbable, self-expanding stent of claim 9, wherein said braid pattern is selected from the group consisting of under-one-over-one, under-one-over-two, under-one-over-three, under-two-over-two, under-two-over-three, and under-three-over-three.

17. A bioresorbable, self-expanding stent comprising:

a cylindrical sleeve having a first end and a second end;

a latticed network disposed between said first end and said second end of said cylindrical sleeve;

said latticed network formed from approximately forty monofilaments helically wound about a longitudinal axis of said cylindrical sleeve, wherein approximately fifteen to twenty of said monofilaments are wound in a clockwise direction and approximately fifteen to twenty of said monofilaments are wound in a counter-clockwise direction, wherein said approximately thirty to forty monofilaments are braided in an alternating braid pattern, wherein said braid pattern is selected from the group consisting of under-one-over-one, under-one-over-two, under-one-over-three, under-two-over-two, under-two-over-three, and under-three-over-three.; and

said plurality of braided monofilaments comprises poly-L-lactide polymers, and said cylindrical sleeve having a controllable in vivo lifetime.

18. A bioresorbable, self-expanding stent comprising:

a tubular sheath having a first end and a second end; and

a fenestrated walled surface disposed between said first end and said second end, said fenestrated walled surface comprised of at least one biocompatible polymer, and said fenestrated walled surface having a controllable in vivo lifetime.

19. The bioresorbable, self-expanding stent of claim 18 wherein said at least one biocompatible polymer is polydioxanone.

20. The bioresorbable, self-expanding stent of claim 18 wherein said tubular sheath has an inner diameter ranging from 12 mm to 18 mm.

21. The bioresorbable, self-expanding stent of claim 18 wherein said tubular sheath has an inner diameter of approximately 15 mm.

22. A bioresorbable, self-expanding stent comprising:

a tubular sheath having a first end and a second end, said tubular sheath having an inner diameter ranging from 12 mm to 18 mm; and

a fenestrated walled surface disposed between said first end and said second end, said fenestrated walled surface comprised of at least one biocompatible polymer, and said fenestrated walled surface having a controllable in vivo lifetime.

23 ~~22.~~ The bioresorbable, self-expanding stent of claim 22 wherein said tubular sheath has an inner diameter of approximately 15 mm.

24 ~~23.~~ The bioresorbable, self-expanding stent of claim 22 wherein said at least one biocompatible polymer is polydioxanone.

25 ~~24.~~ A bioresorbable, self-expanding stent comprising:

a tubular sheath having a first end and a second end, said tubular sheath having an inner diameter of approximately 15 mm; and

a fenestrated walled surface disposed between said first end and said second end, said fenestrated walled surface comprised of polydixanone, wherein said tubular sheath has a controllable in vivo lifetime.

26 ~~25.~~ A method of producing a bioresorbable, self-expanding stent comprising:

providing biocompatible, bioresorbable monofilaments;

braiding said monofilaments into a latticed network, said latticed network having an alternating braiding pattern; and

annealing said latticed structure.

27 ~~26.~~ The method of claim 25 further comprising:

adjusting annealing conditions to achieve a predetermined in vivo functional life.

28 ~~27.~~ The method according to claim 25 wherein said biocompatible, bioresorbable monofilaments are poly-L-lactide monofilaments.

29 ~~28.~~ The method according to claim 25 wherein said annealing step further includes heating said latticed structure to 90°C in an inert atmosphere.

30 ~~29.~~ The method according to claim 28 wherein said inert atmosphere is selected from the group consisting of nitrogen, argon, and helium.

31 ~~30.~~ The method according to claim 28 wherein said inert atmosphere comprises a high vacuum.

32 ~~31.~~ The method according to claim 25 further comprising:

axially compressing said latticed structure by 30% to 60% prior to said annealing step.

33 ~~32.~~ The method of claim 25 further comprising:

exposing said annealed latticed structure to gamma irradiation.

34 ~~33.~~ The method according to claim 32 wherein said latticed structure is exposed to approximately 35 kGy to 75 kGy total dose of gamma irradiation.

35 ~~34.~~ A method of producing a bioresorbable, self-expanding stent comprising:

providing biocompatible, bioresorbable monofilaments;

braiding said biocompatible, bioresorbable monofilaments into a latticed structure, wherein said biocompatible, bioresorbable monofilaments are woven in an alternating braiding pattern; and

annealing said latticed structure at approximately 90°C in an inert atmosphere wherein said inert atmosphere is selected from the group consisting of nitrogen, argon, helium, and high vacuum.

36 ~~35.~~ The method according to claim 34 further comprising:

axially compressing said latticed structure on a mandrel by 30% to 60% prior to said annealing step.

37 ~~36.~~ The method according to claim 34 further comprising:

exposing said annealed latticed structure to gamma irradiation.

38 ~~37.~~ The method according to claim 36 wherein said latticed structure is exposed to approximately 35 kGy to 75 kGy total dose of gamma irradiation.

39 ~~38.~~ A method of producing a bioresorbable, self-expanding stent comprising:

(a) providing poly-L-lactide monofilaments;

(b) braiding said poly-L-lactide monofilaments into a latticed structure, wherein said poly-L-lactide monofilaments are woven in an alternating under-two-over-two pattern;

(c) axially compressing said latticed structure on a mandrel by 30% to 60%;

(d) annealing said latticed structure at approximately 90°C for at least one hour in an inert atmosphere, wherein said inert atmosphere is selected from the group consisting of nitrogen, argon, helium, and high vacuum; and

(e) exposing said latticed structure to approximately 35 kGy to 75 kGy total dose of gamma irradiation.

40 ~~39.~~ A method of producing a stent comprising:

selecting a biocompatible, bioresorbable polymer;

forming a tubular sheath having fenestrations from said biocompatible, bioresorbable polymer; and

annealing said tubular sheath.

41 ~~40.~~ The method according to claim 39 wherein said forming step further comprises injection molding or extruding said tubular sheath.

42 ~~41.~~ The method according to 39 wherein said annealing step further comprises heating said tubular sheath to a temperature of approximately 75°C for approximately one to three hours.

43 ~~42.~~ The method according to claim 41 wherein said annealing step further includes exposing said tubular sheath to an inert atmosphere inert atmosphere is selected from the group consisting of nitrogen, argon, and helium.

44 ~~43.~~ The method according to claim 41 wherein said annealing step further includes exposing said tubular sheath to a high vacuum.

45 ~~44.~~ The method according to claim 39 wherein said forming step further comprises laser cutting said fenestrations.

46 ~~45.~~ A method of producing a stent comprising:

selecting a biocompatible, bioresorbable polymer;

forming a tubular sheath from a biocompatible, bioresorbable polymer;

cutting fenestrations into said tubular sheath; and

annealing said tubular sheath to a temperature of approximately 75°C for approximately one to three hours in an inert atmosphere.

46. The method according to claim 45 wherein said annealing step further includes exposing said tubular sheath to nitrogen.

47. The method according to claim 45 wherein said annealing step further includes exposing said tubular sheath to high vacuum.

48. A method of producing a stent comprising:

providing polydioxanone polymers;

injection molding a tubular sheath from said polydioxanone polymers;

laser cutting fenestrations into said tubular sheath; and

annealing said tubular sheath at a temperature of approximately 75°C for at least one hour in an inert atmosphere of high vacuum or nitrogen gas.

49. A bioresorbable, self-expanding stent comprising:

a cylindrical sleeve having a first end and a second end;

a latticed network disposed between said first end and said second end of said cylindrical sleeve;

said latticed network formed from approximately forty monofilaments helically wound about a longitudinal axis of said cylindrical sleeve, wherein approximately twenty of said monofilaments are wound in a clockwise direction and approximately twenty said monofilaments are wound in a counter-clockwise direction, wherein said approximately forty monofilaments are braided in an alternating under-two-over-two braid pattern; and

said plurality of braided monofilaments comprises poly-L-lactide polymers, and said bioresorbable stent having a controllable in vivo lifetime of at least two weeks.

51. ~~50.~~ A method for using a bioresorbable, self-expanding stent comprising:

disposing said bioresorbable, self-expanding stent in a delivery system, said bioresorbable, self-expanding stent having a controlled in vivo lifetime;

inserting said delivery system into a constricted region within a body canal;

deploying said bioresorable stent into said constricted region; and

allowing said bioresorbable stent to self-expand and restore patency of said constricted region.